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EXAMINER				
NOORISTANY, SULAIMAN				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/509,133

Applicant(s)

JAHN ET AL.

Examiner

SULAIMAN NOORISTANY

Art Unit

2446

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/27/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)
- Paper No(s)/Mail Date 09/27/2004
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Detailed Action

This Office Action is response to the application (10/509133) filed on 09/27/2004.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-20 recite "module..." which is directed at a computer program. A computer program is non-statutory because it is not considered a process, machine, manufacture, or composition of matter, or any new and useful improvement thereof. Because the claim may be directed toward a program the claim as a whole is considered non-statutory.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 1-20 are rejected under 112, second paragraph as being indefinite for failing to particularly point and distinctly claim the subject matter which applicant regards as the invention

In claim 1, "*capable*" in line 4 is indefinite and not clear what this is in reference to (i.e., it is unclear if anything is actually being performed). However, the claims will be given a broad reasonable interpretation for the purposes of examination as best understood.

In claim 1, "*by means of supervisory channel*" in line 6 is indefinite and not clear what this is in reference to. However, the claims will be given a broad reasonable interpretation for the purposes of examination as best understood.

In claim 1, "*performing a function selected from the group consisting of amending*" in line 25-26 is indefinite and not clear what this is in reference to. However, the claims will be given a broad reasonable interpretation for the purposes of examination as best understood.

Claims 2-20 are rejected for similar reasons as stated for claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(b) that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless-

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 13 & 18 are rejected under 35 USC 102 (b) as being anticipated by **Harris -**
- NPL *"Bridging the network management gap:"*

Regarding claim 1, Harris teaches wherein a method of managing a network includes a plurality of nodes that are interconnected in an arbitrary topology so as to be capable of carrying traffic between said plurality of nodes, the method comprising the steps of:

providing a supervisory network by means of supervisory channels between the nodes of said plurality of nodes ("**DCC**" on page 220, right-hand column, lines 1-5);

providing a node manager which is one or more software modules in each one of said plurality of nodes ("**Network Element Layer**" on page 220, left-hand column, lines 10- 13);

establishing supervisory connections over one or more of the supervisory channels between selected nodes of said plurality of nodes through which the node manager communicates with other node managers in other nodes of said plurality of nodes ("**Network Element**" on page 220, right-hand column, lines 1-5);

providing a node module in each node manager that provides an interface to hardware settings of each of respective said plurality of nodes that is associated with the node module ("**functions and views specific to the NE**" on page 220, left-hand column, lines 10-13);

providing a master module in at least one node manager ("**GNE**" on page 220, right-hand column, lines 7-11);

establishing supervisory connections over one or more supervisory channels between the selected nodes of said plurality of nodes, said supervisory connections

providing communication through between the master module and the node modules

("GNE" on page 220, right-hand column, lines 7-12); and

performing a function selected from the group consisting of amending hardware settings in the selected nodes, and/or monitoring hardware settings in the selected nodes, and a combination thereof, in selected nodes with the node module of each of the selected nodes ("**NE configuration management**", "**multi-vendor equipment support**" and "**inventory management**" on page 221, right-hand column, lines 38, 44 and 51),

wherein controlling the amendments carried out by the node modules and processing the monitored hardware settings is carried out by the master module (**"GNE" on page 220, right-hand column, lines 7-12 and page 221, right-hand column, lines 38, 44 and 51).**

Regarding claim 2, Harris teaches wherein providing a master module in each of at least two node managers, wherein each master module is in a state selected from the group consisting of an active state and a passive state; and setting a first of the at least two master modules to the active state and maintaining or setting the other of the at least two master modules to the passive state, wherein controlling the amendments carried out by the node modules and processing the monitored hardware settings is carried out only by the first master module ("**operation survivability**" see page 221, left-hand column, lines 1-4).

Claim 13 list all the same elements of **claim 1**, but in system rather than method form. Therefore, the supporting rationale of the rejection to **claim 1** applies equally as well to **claim 13**.

Claim 18 list all the same elements of **claim 1**, but in system rather than method form. Therefore, the supporting rationale of the rejection to **claim 1** applies equally as well to **claim 18**.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a), which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3-12, 14-17, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Harris -- NPL “*Bridging the network management gap*:”** in view of **Naeimi U.S Patent No. US 6,363,416**.

Regarding claim 3, Harris taught the method of managing a network as in claim 1 above. However, Harris is silent in terms “the setting of the state of the at least two master modules is done automatically”.

Naeimi teaches that it is well known to utilize "the setting of the state of the at least two master modules is done automatically" **(the present invention offers a system and method for automatic election of a representative node ("master") within a communication network with built-in redundancy – col. 1, line 66 – col. 2, line 20)** in order to make the system more efficient and provide a performance in which the network is greatly enhanced (col. 2).

It would have been obvious to one ordinary skill in the art when the invention was made to modify Harris's invention by enabling one of the nodes to be automatically identified as a master of the nodes for retrieving data from the central location and then transmitting the data to all peer nodes interested in receiving the data. No manual intervention or pre-operation designation of a master is required within the present invention. As such, repetitive requests for information by individual nodes are eliminated, and the volume of network traffic is thereby significantly localized. Furthermore, rather than arbitrarily pre-assigning particular node(s) to serve as a master, the present invention provides an automated process by which a new master is dynamically elected whenever an existing master fails or none exists. Therefore, the present invention provides built-in redundancy which greatly improves the reliability of network communications. These and other advantages of the present invention not specifically described above will become clear within discussions of the present invention herein, as taught by Naeimi (col. 2).

Regarding claim 4, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein periodically generating heartbeat messages in each node of said plurality of nodes and exchanging these messages among all of said plurality of nodes, wherein each heartbeat message contains information about the state of the master module of a respective node of said plurality of nodes (**sends a "heartbeat" – col.2, lines 23-25**); and processing the received heartbeat message in each node of said plurality of nodes and setting the state of the master module in the respective node depending on information in the received messages, that a single master module of all of said plurality of nodes is always in the active state (**Fig. 7 – sends/receives a "heartbeat" – col.2, lines 23-34**).

Regarding claim 5, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein providing each master module with an initial passive state when the node manager of the respective node of said plurality of nodes is initialized, and wherein changing the state of the master module in the respective node of said plurality of nodes is made according to decision selected from the group consisting of:

if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives at least one heartbeat message that contains information about a master module of another node of said plurality of nodes being in the active state the master module of the respective node of said plurality of nodes remains in the passive state (**When a node powers up**

or fails to receive a heartbeat from the master within a timeout period, the node tries to identify or discover the master. Thereafter, each individual non-master node also actively ensures that communication between itself and the master remains viable. In another embodiment, when the master ceases to respond to its peer nodes requests, the peers are promptly alerted. The peers then initiate an election process by which a new master is elected – col. 2, lines 22-34); and

if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives no heartbeat message that contains information about a master module of another node of said plurality of nodes being in the active state within a predetermined time interval the master module of the respective node of said plurality of nodes changes into the active state **(When a node powers up or fails to receive a heartbeat from the master within a timeout period, the node tries to identify or discover the master. Thereafter, each individual non-master node also actively ensures that communication between itself and the master remains viable. In another embodiment, when the master ceases to respond to its peer nodes requests, the peers are promptly alerted. The peers then initiate an election process by which a new master is elected – col. 2, lines 22-34).**

Regarding claim 6, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein each heartbeat message generated in each node of said plurality of nodes further contains node ID of the respective node of said plurality

of nodes in which the message is generated, and wherein changing of the state of the master module in the respective node of said plurality of nodes is made according a decision selected from the group consisting of:

if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives at least one heartbeat message that contains information about a master module of another node of said plurality of nodes being in the active state, the master module of the respective node of said plurality of nodes remains in the passive state **(FIG. 5 is a flow diagram illustrating steps of the automatic process for a node to perform master election in accordance with the present invention – col. 2, lines 54-57);**

if the master module of the respective node of said plurality of nodes is in the passive state and the respective node of said plurality of nodes receives no heartbeat message that contains information about a master module of another of said plurality of nodes being in the active state within a predetermined time the respective node of said plurality of nodes compares the node ID with other received node IDs using a predetermined procedure and depending on the result of this procedure, especially if the node ID is smaller than the other received node IDs, the master module of the respective node of said plurality of nodes changes into the active state **(Fig. 6-7 – sends/receives a "heartbeat" – col.2, lines 23-34);**

if the master module of the respective node of said plurality of nodes is in the active state and the node receives no heartbeat message that contains information about a master module of another of Said plurality of nodes being in the active state

within a predetermined time/ the master module of the respective node of said plurality of nodes remains in the active state (**Fig. 6-7 – sends/receives a "heartbeat" – col.2, lines 23-34**);

if the master module of the respective node of said plurality of nodes is in the active state and the respective node of said plurality of nodes receives at least one heartbeat message that contains information about a master module of another of said plurality of nodes being in the active state the respective node of said plurality of nodes compares the node ID of the node of said plurality of nodes with other received node IDs using a predetermined procedure and depending on the result of this procedure, especially if the node ID is not smaller than the other received node IDs, the master module of the respective node of said plurality of nodes changes into the passive state (**Fig. 6-7 – sends/receives a "heartbeat" – col.2, lines 23-34**).

Regarding claim 7, Harris and Naeimi together taught the method as in claim 3 above.

Harris further teaches wherein communicating between the node module in each node of said plurality of nodes communicates and the master module through a set of supervisory connections selected from the group consisting of a full set of supervisory connections and a reduced set of supervisory connections (**"GNE" on page 220, right-hand column, lines 7-12**);

wherein in the full set of supervisory connections, each node module communicates with all of the master modules present in one or more nodes of said plurality of nodes, especially whether in the active state or passive state and

wherein in the reduced set of supervisory connections, each node module communicates only with a single master module present in one of said plurality of nodes ("**NE configuration management**", "**multi-vendor equipment support**" and "**inventory management**" on page 221, right-hand column, lines 38, 44 and 51).

Regarding claim 8, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein providing a master controller module in each node said plurality of nodes which is connected to the master module of the respective node (**FIG. 1B is an exemplary communication network environment in accordance with the present invention – col. 2, lines 42-44**),

wherein master controller modules of different nodes of said plurality of nodes generate, exchange and process the heartbeat messages and control the state of the master module of the respective node (**FIG. 1B is an exemplary communication network environment in accordance with the present invention – col. 2, lines 42-44**).

Regarding claim 9, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein the node module in each node of said plurality of nodes communicates only with the master module in the active state and in the case of changing the state of the master module to the active state and a further master module to the passive state, the supervisory connections through which the communication

takes place are reconfigured (**FIG. 1B is an exemplary communication network environment in accordance with the present invention – col. 2, lines 42-44**).

Regarding claim 10, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein the master controller module of the node of said plurality of nodes having the further master module that has been changed to the active state sends a reconfigure message to each node of the plurality of nodes that contains the node ID of the node of said plurality of nodes having the further master module (**FIG. 6 is a flow diagram illustrating steps of the automatic process for a node to negotiate for master status in accordance with the present invention – col. 2, lines 57-60**).

Regarding claim 11, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein providing a database containing information relating to a hardware state of each node of said plurality of nodes and local and global network management activities in each node of said plurality of nodes (**if the multi-homed node is connected to a database, all masters residing in the node may be multiplexed via the same connection to the database, so that multiple database connections are unnecessary – col. 11, lines 20-40**); synchronizing the database in each node of said plurality of nodes according to the following steps:

before first master module is set to the active state the corresponding a first node of said plurality of nodes, that is associated with the first master module and includes a current state of the database, especially the master controller module of the corresponding node, sends the current state of the database of the corresponding node to all other nodes of said plurality of nodes, especially the master controller of all other nodes; the receiving nodes of said plurality of nodes that receive the current state of the database, especially the master controller modules of the receiving nodes, synchronize database in each receiving node with the current state of the database **(if the multi-homed node is connected to a database, all masters residing in the node may be multiplexed via the same connection to the database, so that multiple database connections are unnecessary – col. 11, lines 20-40).**

Regarding claim 12, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein the master module in each receiving node of said plurality of nodes informs master controller in each receiving node of said plurality of nodes of any changes in the database of the receiving node of said plurality of nodes; master controller sends the changes in the database of the receiving node of the plurality of nodes to all other master controllers in all other nodes of the plurality of nodes **(if the multi-homed node is connected to a database, all masters residing in the node may be multiplexed via the same connection to the database, so that multiple database connections are unnecessary – col. 11, lines 20-40);**

when one of the plurality of nodes comes up after a failure the master controller in the one of the plurality of nodes that comes up after a failure requests the current state of the database from the master controller of the first node of said plurality of nodes with the master module in the active state to synchronize the database of the one node that comes up after a failure with the database of the first node of said plurality of nodes with the master module in the active state **(if the multi-homed node is connected to a database, all masters residing in the node may be multiplexed via the same connection to the database, so that multiple database connections are unnecessary – col. 11, lines 20-40).**

Regarding claim 14, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein an interface associated with the master module to support one or more Graphical User Interfaces located in one or more nodes of the plurality of nodes **(display device suitable for creating graphic images and alphanumeric characters recognizable to the user –col. 4, lines 19-22).**

Regarding claim 15, Harris and Naeimi together taught the method as in claim 3 above.

Harris further teaches wherein one or more software modules included in the master module for global and local network management **(Fig. 2 – Sonet operations architecture using Ems – page 220).**

Regarding claim 16, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein at least one node manager has the master module and

wherein each master module can be set to passive state or to an active state, wherein only in the active state the master module has the functionality for controlling the node modules and amending the hardware settings and for processing the hardware settings monitored by the node modules, and wherein in the passive state the master module mainly has functionality for performing database synchronization **(if the multi-homed node is connected to a database, all masters residing in the node may be multiplexed via the same connection to the database, so that multiple database connections are unnecessary – col. 11, lines 20-40)**.

Regarding claim 17, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein a master controller module associated with each node of said plurality of nodes for setting the state of the master module **(FIG. 1B is an exemplary communication network environment in accordance with the present invention – col. 2, lines 42-44)**.

Regarding claim 19, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein each node module communicates only with a single master module in an active state present in one node in the reduced set of supervisory connections **(FIG. 1B is an exemplary communication network environment in accordance with the present invention – col. 2, lines 42-44)**.

Regarding claim 20, Harris and Naeimi together taught the method as in claim 3 above.

Naeimi further teaches wherein one or more software modules in the master module for database related tasks and features for a database containing information relating to a hardware state of each node and local and global network management activities in each node **(if the multi-homed node is connected to a database, all masters residing in the node may be multiplexed via the same connection to the database, so that multiple database connections are unnecessary – col. 11, lines 20-40)**.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sulaiman Nooristany whose telephone number is (571) 270-1929. The examiner can normally be reached on M-F from 9 to 5. If attempts to

reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Pwu, can be reached on (571) 272-6798. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sulaiman Nooristany 11/20/2008

/Jeffrey Pwu/

Supervisory Patent Examiner, Art Unit 2446